

AD-A204 569

DATE 2-10-89

TO: Information Services Branch

FROM: Computer Products Support Group DS  
(Init)

KT  
(Init)

LB  
(Init)

RE: DOD/SW/DK-89/008. Announce in GRA&I  
(Report No.)

(1)

Priority Action is Required

Attached

- ☒ Form NTIS 231.
- ☒ Form <sup>SF-277</sup> NTIS FCPC 01
- ☒ NTIS 79
- ☒ RDP (OF 272)
- ☐ Proof Listing
- ☐ Consigned Inventory Acquisition Form (Interagency Agreement Number and Split)

Process for:

- |                   |   |
|-------------------|---|
| K File (Data)     | <input type="checkbox"/> Documentation            |
|                   | <input type="checkbox"/> Diskette                 |
| -----             |   |
| H File (Software) | <input checked="" type="checkbox"/> Documentation |
|                   | <input checked="" type="checkbox"/> Diskette      |

Action

- ☐ Loan Document Form Attached
- ☒ Defense Sponsored: Acquire ADA Number
- ☐ Order Pending. Return immediately after copying necessary pages.

**DTIC ELECTE**  
**S D**  
FEB 27 1989

Remarks

Includes DK-89/008A and  
Include the documentation from  
DOD/SW/DK-89/003A AD H20456C

Highlight!

**DISTRIBUTION STATEMENT A**  
Approved for public release  
Distribution Unlimited

Computer Products Transmittal

89 2 24 039

☐ DELETE☒ NEW☐ REPLACE☐ CORRECTION

AD-A204 569

NTIS COMPUTER PRODUCTS CATALOG DATA SHEET		1. ACCESSION NO.	2. CONTRIBUTING AGENCY REPORT NO. DOD/SW/DK-89/008	3. SUBJECT																				
4. PRODUCT (circle one) DATA FILE PUBLICATION DATA BASE REFERENCE SERVICE SOFTWARE MODEL, SIMULATION																								
5. AGENCY, BUREAU, DIVISION, AND ADDRESS Department of Army The Hydrologic Engineering Center, Corps of Engineers 609 Second Street Davis, California 95616																								
6. PRODUCT NAME (Use agency nomenclature) HEC-6, Scour and Deposition in Rivers and Reservoirs (for microcomputers)																								
7. DESCRIPTORS OF PRODUCT (Keywords, identifiers, etc.) *Software, River Hydraulics, Sediment Transport Scour and Deposition Reservoir Deposition Diskette																								
8. DATES OF COVERAGE (For one-time reports, use as-of-date; for software, use date and release no.) Version Oct 86			9. FILE SIZE IN NO. OF: Diskettes <table border="1"><tr><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> PUNCHED CARDS <table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>				2																	
		2																						
10. AVAILABILITY STATEMENT - AGENCY NAME AND ADDRESS, ORDER NO., ETC. (If NTIS sells, leave blank)																								
11. PRICE INFORMATION Price code: D01 \$50.00 Price includes documentation:																								
12. GEOGRAPHIC SCOPE None																								
13. TECHNICAL REPRESENTATIVES (List at least one for subject and one for media)																								
NAME		TITLE		PHONE NO.																				
Michael Gee				(916) 551-1748																				
Gary Brunner				(916) 551-1748																				
14. DOCUMENTATION																								
<input checked="" type="checkbox"/> AVAILABLE as:			EXPECTED AVAILABILITY DATE NA																					

(4)

NTIS COMPUTER PRODUCTS CATALOG DATA SHEET

15. COMPUTER PRODUCT ABSTRACT

The purpose of this one-dimensional sediment transport model is to calculate water surface and sediment bed surface profiles by computing the interaction between sediment material in the stream bed and the flowing water-sediment mixture. The total sediment load is computed for each cross section along with the trap efficiencies for clays, silts and sands. The change in bed elevation, water surface elevation and thalweg elevation are also computed for each cross section. Dredging and in-stream gravel mining operations can be simulated and reservoir deposition can be analyzed with the model. ...Software description: The software is written in the Fortran programming language for implementation on IBM/PC or compatible machines using MS/PC/DOS 2.1+ operating system. Memory requirement is 512K bytes. Math coprocessor (8087, 80287, 80387 or equivalent) is required. Hard disk is required in order to run the menu program "MENU6". (KR) ←



Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By <u>M.T. 50-NTB</u>	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
<u>A-1</u>	<u>21</u>

16. DATA FILE TECHNICAL DESCRIPTION

The software is contained on 5¼-inch diskette(s), double density (360K), compatible with the IBM/PC microcomputer. The diskettes are in the ASCII format.

17. SOFTWARE TECHNICAL DESCRIPTION

Software is written in;

Fortran X COBOL \_\_\_\_\_ Basic \_\_\_\_\_ Assembly \_\_\_\_\_ Other (Specify) \_\_\_\_\_

Software requires;

CPR Mfr. IBM PC Model(s) \_\_\_\_\_ Operating system(s) MS/PC DOS 2.1+  
Minimum of 512 K bytes core. The following special features and/or additional requirements in hardware:  
Two 5¼" floppy disk drives, or one 5¼" floppy disk drive and a 10 MB hard disk.  
Math coprocessor (8087/80287/80387 or equivalent) is required. Hard disk is  
required in order to run the menu program "MENU6".

SIGNATURE OF AGENCY REPRESENTATIVE, PHONE NO., AND DATE

SIGNATURE OF NTIS REPRESENTATIVE AND DATE FORM PREPARED

# COMPUTER MAGNETIC TAPE FILE PROPERTIES

01. Completion Date Year   Month   Day 			02. Form Prepared By (Name and Phone)  Vernon R. Bonner			03. Reel ID Number (Property Control No.)		
04. Recording Date Year   Month   Day 			05. File Identifier or Descriptive Title  HEC-6, Scour and Deposition in Rivers and Reservoirs			06. Short Title (External Label Name) HEC-6		
07. Source Unavailable Year   Month   Day 			08. Documentation Yes   No   Available <input checked="" type="checkbox"/> <input type="checkbox"/> (Enter Citation)			09. File Position on Reel  _____ of _____		
10. To Be Returned Yes   No   To Other <input type="checkbox"/> <input checked="" type="checkbox"/> Than The Sender			11. Submitting Organization & Address Department of Army The Hydrologic Engineering Center Corps of Engineers 609 Second Street Davis, California 95616			12. Receiving Organization & Address United States Department of Commerce National Technical Information Service 5285 Port Royal Road Springfield, Virginia 22161		
13. Due Back Date Year   Month   Day 			14. Technical Contact(s) & Phone Number(s)  Michael Gee, Gary Brunner, Randy Hills (916) 551-1748					

## RECORDING SYSTEM CHARACTERISTICS

EQUIPMENT MANUFACTURER AND MODEL	15. Processing Unit IBM PC or compatibles		17. No. of Tracks 7   9   Other			18. Parity Odd   Even		19. Density (BPI)
	16. Tape Subsystem							
RECORDING SOFTWARE	20. Operating System, Release & Version MS DOS 2.1 or greater		22. Internal File Identifier					
	21. Utility Program or Data Base Language							
23. Characters Set (Graphics) <input checked="" type="checkbox"/> ASCII <input type="checkbox"/> BCD <input type="checkbox"/> Other (Specify) <input type="checkbox"/> EBCDIC <input type="checkbox"/> FIELDATA <input type="checkbox"/> Non-Print Codes			24. Recorded Label (Internal Label) <input type="checkbox"/> Header <input type="checkbox"/> ANSI X 3.27 Standard <input type="checkbox"/> Other <input type="checkbox"/> Trailer <input type="checkbox"/> FIPS Standard <input checked="" type="checkbox"/> None					

## FILE CHARACTERISTICS

NUMBER OF RECORDS	25. Physical		27. Record Type <input checked="" type="checkbox"/> Fixed Length <input type="checkbox"/> Other Than Fixed		28. Records/Block (Blocking Factor) 1		29. TYPE OF FILE ORGANIZ- ATION (Check One Box)  <input type="checkbox"/> One File One Reel <input type="checkbox"/> One File Multiple Reels <input type="checkbox"/> Multiple Files One Diskette <input checked="" type="checkbox"/> Multiple Files Multiple Diskettes
	26. Logical						
RECORD LENGTH	30. Physical 80 <input checked="" type="checkbox"/> Bytes <input type="checkbox"/> Chars. <input type="checkbox"/> Words (   Bits/Word)						
	31. Logical <input type="checkbox"/> Bytes <input type="checkbox"/> Chars. <input type="checkbox"/> Words (   Bits/Word)						

## SUPPLEMENTAL INFORMATION

32. Use/Handling Constraints (Specify if Yes)	
Yes	No
	<input checked="" type="checkbox"/>
33. For Submitting Organization Use HEC-6 is provided on two 5¼" double-sided 360 KB floppy diskettes as follows: (1) executable program file and example input/output data; (2) menu program, utility programs LIST.COM (screen display) and PROUT.EXE (printer output), and implementation guide (file README.DOC).	

# COMPUTER DISKETTE FILE PROPERTIES

<b>01. Completion Date</b> <table border="1"> <tr> <th>Year</th> <th>Month</th> <th>Day</th> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>			Year	Month	Day				<b>02. Long Title</b> HEC-6, SCOUR AND DEPOSITION IN RIVERS AND RESERVOIRS (FOR MICROCOMPUTER)			<b>03. Short Title</b> HEC-6		
Year	Month	Day												
<b>04. Copying Date</b> <table border="1"> <tr> <th>Year</th> <th>Month</th> <th>Day</th> </tr> <tr> <td>89</td> <td>01</td> <td>--</td> </tr> </table>			Year	Month	Day	89	01	--	<b>05. Subscription</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>06.</b> <input checked="" type="checkbox"/> New File <input type="checkbox"/> Replacement		<b>07. Number of Diskettes</b> 1	
Year	Month	Day												
89	01	--												
<b>08. Submitting Organization and Address</b> Department of Army Hydrologic Engineering Center Corps of Engineers 609 Second Street Davis, CA 95616					<b>09. Technical Contact (s) and Phone</b> Michael Gee (916) 551-1748									
<b>10. Host Computer/Model</b> IBM/PC			<b>11. Memory Requirement</b> 512 K		<b>12. Language/Format</b> Fortran									
<b>13. Diskette Size</b> 3 1/2    5 1/4    Other <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>		<b>14. Diskette Capacity</b> <input checked="" type="checkbox"/> 360K <input type="checkbox"/> 720K <input type="checkbox"/> 800K <input type="checkbox"/> 1.2M <input type="checkbox"/> 1.44M <input type="checkbox"/> Other			<b>15. Operating System/Version</b> MS DOS 2.1+									
<b>16. Number of Files</b>		<b>17. Number of Records</b>		<b>18. Record Length</b>										
<b>19. Documentation</b> <input type="checkbox"/> on Diskette (File # _____ ) <input checked="" type="checkbox"/> Paper Copy														
<b>20. Supplemental Information</b>														
<b>21. For Submitting Organization Use</b>														

**INSTALLATION INSTRUCTIONS FOR MICROCOMPUTER VERSION OF  
HEC-6**

This version of HEC-6 (1 October, 1986) will run on an IBM compatible microcomputer that has the following:

- \* 512 Kilobytes (KB) of Random Access Memory (RAM)
- \* MS DOS 2.1 or greater
- \* Math Coprocessor 8087, 80287, or equivalent
- \* Two 5 1/4 inch double-sided (360 KB or 1.2 MB) floppy disketts drives, or one 5 1/4 inch floppy diskette drive and a 10 Megabyte (or larger) hard disk.

**Note:** To run the HEC-6 menu program, "MENU6", it is necessary to have a hard disk system!!!

**GETTING STARTED**

Many HEC programs require the capability to open more than eight (8) files at any one time. Because eight (8) is the system default, you will need to have a file in the root directory (or on the DOS diskette) called CONFIG.SYS. This file should contain the following two lines:

```
FILES=20  
BUFFERS=10
```

This will increase the number of possible files to be opened from eight (8) to twenty (20), and it will also increase the number of buffers used to hold data being read from or written to a disk. Using BUFFERS=10 is not absolutely necessary, but this number is suggested for program efficiency. You can use COED or any editor to create or edit the CONFIG.SYS file. If you have not loaded COED onto your system yet, please refer to the COED documentation to do so (COED, Corps of Engineers Editor, 1987). For further explanation of the CONFIG.SYS file consult your DOS manual.

**PROGRAM INSTALLATION**

The HEC-6 computer program, test data, test output, and menu system are provided on two 5 1/4 inch double-sided 360 KB floppy diskettes as follows:

```
HEC6 DISKETTE #1: HEC6.EXE  
                  HEC6.DAT  
                  HEC6.OUT
```

HEC6 DISKETTE #2: MENU6.BAT  
HEC6MENU.EXE  
HEC6MENU.DAT  
PARMS.DAT  
LIST.COM  
PROUT.EXE  
README.DOC

Backup copies of these diskettes should be made if you have a two-floppy diskette system!!!

A. Explanation of Files Included on the HEC6 Diskettes

HEC6.EXE : The HEC6 program in an executable form.

HEC6.DAT : Example data input file.

HEC6.OUT : Output from the example data "HEC6.DAT".

MENU6.BAT : The menu system batch file that is used to run the HEC6 menu programs.

HEC6MENU.EXE : The executable portion of the HEC6 menu system.

HEC6MENU.DAT : Data file for the HEC6 menu program which contains information about the menu program.

PARMS.DAT : Data file for the HEC6 menu program which is used to pass input and output filenames between programs.

LIST.COM : The LIST utility program provides convenient screen display of files written to disk.

PROUT.EXE : The PROUT utility program sends output files, written to disk, to the printer with carriage control invoked.

README.DOC : File containing this user implementation guide.

B. Installation on a Hard Disk System

1. Start your computer.
2. You may wish to have all program related files reside in a subdirectory on the hard disk. Assuming that C: is the default drive for the hard disk, create the subdirectory ("HEC6" in this example) and make it the current directory with the following MS DOS commands:

MD\HEC6  
CD\HEC6

3. Place the HEC6 diskette #1 in the A drive and use the following command to copy the files to the HEC6 subdirectory on the hard disk:

**COPY A:\*.\***

4. Place the HEC6 diskette #2 in the A: drive and use the same command:

**COPY A:\*.\***

**NOTE:** You may want to move the utilities LIST and PROUT to the root directory so they can be accessed from any directory.

5. You are now ready to run the program. Go to the program execution portion of this document (Part A).

#### C. Installation on a Two-Floppy-Diskette System

There is no installation procedure necessary for the two-floppy-diskette system. Be aware that without a hard disk you will not be able to run the menu system (MENU6) that is contained on diskette #2. You will however be able to execute the program by itself. Go to the Program Execution portion of this document (Part B).

### PROGRAM EXECUTION

#### A. Execution on a Hard Disk System

You are now ready to test the computer program. The preferred mode of execution is through the menu system, though you can run the program without going through the menu. To execute the program through the menu system do the following:

1. Go to the directory containing the HEC6 files (e.g. CD\HEC6).
2. Type **MENU6** and press the enter key. This will invoke the batch file used to run the menu system of programs. You must operate the menu system through this batch file or the programs will not function correctly.
3. On the screen should now be the main HEC6 Package Menu, as shown in Figure 1. As you can see you have five choices. Before you continue please review the section on the HEC6 Package Menu Program in this document.
4. If you have reviewed the section on the HEC6 Package Menu you will know that it is necessary to do option 1 first, unless the input file that you wish to work on has not been created yet. (If the input file has not been created yet you will need to do option two (2) first.) While option 1 is highlighted press the enter key and then type in the input and output names in the pop up window. For this example type **HEC6.DAT** for the input filename and the name



HEC6 Package Menu

**1. Define input/output files**

2. Create/edit input file

3. Run HEC6

4. Display output to console

5. Exit to DOS

INPUT: (specify)

OUTPUT: CON

**Press number of desired option or ↑ ↓ with <ENTER>**

January 1987 version

FIGURE 1. Main HEC6 Package Menu

of your choice for the output filename (Do not use HEC6.OUT for the output filename, we have provided a file with this name to verify your results).

5. The next logical step would be option 2, which is to create or edit an input file. For now we will bypass this step since the defined input file, "HEC6.DAT," already exists and requires no further editing. If you wish to create or edit your own input file you may use this option to do so.
6. Now select option 3 which is to run HEC6. Note that the input and output filenames are passed to the HEC6 program. When the HEC6 program has finished executing, you should see the message "NORMAL HEC-6 TERMINATION." To return control back to the main HEC6 Package Menu press any key.
7. At this point you may want to view the output on the screen, to do this select option 4. Viewing output on the screen is done by executing the LIST utility. LIST has several nice features for viewing the output file. To become more familiar with the LIST features type a ? while in the LIST utility. To get out of LIST type an X, which will terminate the program and give control back to the HEC6 Package Menu. You may also want to send the output to the printer to get a hard copy. This can be accomplished by toggling the printer using the space bar while option 4 is highlighted, and then pressing the enter key.
8. At this point you can exit the menu program by invoking option 5, or you can continue working with the previous four options.

#### B. Execution on a Two-Floppy-Diskette System

1. Start your computer (be sure that you have already made backup copies of the HEC6 diskettes).
2. Place HEC6 Diskette #1, with the HEC6.EXE file, into Drive B. Place a blank formatted diskette into Drive A. The blank diskette will be used to receive output data and scratch files.
3. Make sure that drive A is the default drive, the prompt will be "A>".
4. Start the execution of HEC6 by entering the following command:

**B:HEC6 INPUT=Infile OUTPUT=Outfile**

where:

Infile: The filename where the HEC6 input data resides

Outfile: The filename where the output data will be written. If the user wants the output to go directly to the screen or printer, the commands CON (screen) or LPT1 (printer) can be used in place of the output filename.

For this example type the following:

**B:HEC6 INPUT=B:HEC6.DAT OUTPUT=TEST6.OUT**

Note: If the input and output filenames are not specified on the execution line, the program will prompt you for them in the following manner:

ENTER THE FILENAME FOR INPUT [] - (Type filename here)

ENTER THE FILENAME FOR OUTPUT [] - (Type filename here)

5. Once the program has finished executing you should get the message "NORMAL HEC-6 TERMINATION." If you did not get this message some type of error has occurred. View the output file to see how far the program ran before the error occurred. This should help you find the problem.

### PROGRAM VERIFICATION

In the above example you executed the HEC6 program by using the example data file provided to you on diskette #1. You were advised to create your own output file for this example. At this point you should compare this output file with the one provided to you on diskette #1 (HEC6.OUT). Check your results to ensure that they are the same as what we provided to you. This will ensure that the program is working correctly on your computer system.

### HEC6 PACKAGE MENU PROGRAM

#### A. Purpose of the Program

The HEC6 package menu, MENU6, has been created to aid the user in operating the HEC6 program. The menu system provides the capability to create and edit input files; execute the HEC6 program; and to display output conveniently to the screen or the printer. The following provides a description of the menu operation.

#### B. Program Operation

After all of the files have been installed on your hard disk, execute the HEC6 package menu program by typing **MENU6** and press the enter key. You must execute the menu system through this batch file or the programs will not function correctly. On the screen should now be the HEC6 Package Menu as shown in Figure 1. As you can see there are five choices, with the first choice being highlighted. Also highlighted is a status line at the bottom of the screen. This status line is used to direct the user on how

to proceed at any point. The background and text colors of the menu can be changed for color monitors by pressing the F9 and F10 keys respectively. The program will save the selected colors via the HEC6MENU.DAT file.

In general the menu operates by using the cursor arrow keys to move to the desired option and then pressing <ENTER> to execute that option. Another way to execute an option is to press the number of the desired function. Let's talk about each of the five options specifically:

1. Define input/output files:

This option is used to define the target input and output filenames that will be used when executing HEC6. When this option is selected a pop up menu will appear, as shown in Figure 2, which will allow you to enter the input and output filenames. If the input file already exists, this option should be done first because the input and output filenames will be passed by the menu program to all other programs. If the input file does not exist, go to option 2 first. Also note that at the bottom of the screen there is a line that displays the names of the current input and output files that are being used.

2. Create/edit input file:

This option is used to create an input file, or to edit an existing input file, to be used by HEC6. This option will only function if you have also obtained the full screen editor COED and loaded it on to your system ("COED," Corps of Engineers Editor, February 1987). If you have COED on your system this option will allow you to go into the full screen editor with the previously defined input filename as the target file. While in COED you can create or edit an HEC6 input data file. When you are finished the program will return to the main HEC6 Package Menu. For help in using COED refer to the COED user's manual.

3. Run HEC6:

This option executes the HEC6 program. The input and output filenames, defined under option 1, will be passed to the HEC6 program. When the program is finished executing you should get the message "NORMAL HEC-6 TERMINATION" if your input data was entered correctly. If you do not get this message, more than likely there is an error in your input data file. Review the output file to learn more about any possible input data errors. If no errors occurred, and the "NORMAL HEC-6 TERMINATION" message was printed, just press any key to return to the main HEC6 Program Menu.

HEC6 Package Menu

1. Define input/output files

Input file ...(specify)

Output file ..CON

Return to previous menu

5. Exit to DOS

INPUT: (specify)

OUTPUT: CON

Enter filename or ?

Use ↑ ↓ to move through choices.

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FIGURE 2. Define input/output files menu.

4. Display output to the console:

This option is used to display output to the console or the printer. To switch from console to printer, just press the space bar while you are on option 4 (In other words, while option 4 is highlighted). If you choose to view output on the console the utility LIST will be executed with the output filename being passed to it. If you choose to send output to the printer the utility PROUT will be executed with the output filename being passed to it. Upon completion of either task, control will be given back to the HEC6 Package Menu.

5. Exit to DOS:

If this option is chosen it is assumed that you are completely finished with the menu system and control is given back to DOS.

PROGRAM PROBLEMS

If any errors are encountered which indicate potential problems in the HEC6 executable code, please contact HEC.

U.S. Army Corps of Engineers  
The Hydrologic Engineering Center  
609 Second Street  
Davis, CA 95616  
USA

tel. (916) 551-1748  
(FTS) 460-1748

This diskette is intended mainly to be used along with an installation diskette for installing COED and its accessory files on a hard disk. However, COED can be manually installed on a hard disk or a floppy diskette by the procedure given below. It should be noted that either a hard disk or a high density floppy diskette is recommended in order to use COED's "Help Program" feature.

COED requires at least 484 Kbytes of free memory and DOS 2.1 (or later). The math coprocessor is not needed. The \CONFIG.SYS file should contain at least the following: FILES=15 and BUFFERS=10.

The COED program and the COED accessory files are in an archived form. To obtain an operational copy, they must be un-archived using "PKXARC". The files contained on this diskette are as follows:

File	Description
COEDEXE.ARC	The archived executable COED program.
COEDHLP.ARC	An archived file containing the main help file (for general help).
COEDHPG.ARC	An archived file containing program-help files to aid in data entry (e.g., for entering HEC2 data).
COEDDOC.ARC	An archived form of the February 1987 COED documentation.
PKXARC.COM	The program that un-archives the above files.
COED.XTK	A command file for the communications program Crosstalk (XVI) that may be used when connected to a mainframe computer with COED.
README.DOC	This file.

The following example shows how to un-archive the program and the help files from the A drive to the C drive:

```
A:PKXARC A:COEDEXE C:\
A:PKXARC A:COEDHLP C:\
A:PKXARC A:COEDHPG C:\
```

The COED documentation can be un-archived in a similar manner, if desired. If you wish to store the files under a different directory, that directory is specified following the drive letter. If the files are to be stored on floppy diskettes, they must be formatted and have at least 360 Kbytes of space available per archived file.